

Platelet-Rich Plasma (PRP)가

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PRP (Platelet - Rich Plasma)

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: 20 ,
2 cm ,
· ,
· ,
PRP 0.7 cc , 0, 4,
8, 12 가 ,
:
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PRP
· ,
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: PRP (Platelet - Rich Plasma), , ,

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가
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* 2001 가 .

1. (New Zealand White Rabbit, 4, 3 Kg) 20, 1 .

2. 1) PRP 5 cc 가 .

(PLACON, OCT Inc, Korea) (Step 1: 2000G × 3) .

(Step 2: 5000G × 5) 0.6 cc . 10% (CaCl₂) 0.1 cc 0.7 cc

4,9,14), Osteogenic Protein (OP) Bone Morphogenic Protein (BMP) 2,12,16,17), (PRP, Platelet-Rich Plasma) 2

PDGF (Platelet-derived Growth Factor), 11) TGF-β (Transforming Growth Factor-β), TGF-β2, IGF (Insulin-like Growth Factor) 가 , 10) 가 .

PRP 0.7 cc

PRP

3) 가 가

4, 8, 12

Table 1. Radiographic grading scale for the degree of healing

Description	Grade
No visible new bone formation	0
Minimal new disorganized bone	1
Disorganized new bone bridging graft to host at both ends	2
Organized new bone of cortical density bridging at both ends	3
Loss of graft-host distinction	4
Significant new bone and graft remodeling	5

6-point scale⁵⁾ 가
(Table 1).
PRP T
p value가 0.05
PRP 가
가 4
1 (0.95) 8 2
(1.40), 8
1.80 , 2.45 , 12
2.75 , 3.25 4
(p=0.001), 8 (p=0.001), 12 (p=0.002)
(Table 2).

8

(Fig. 1).

Table 2. Radiographic grading results

Postoperative weeks	Control (n=20) (Mean±SD)	PRP (n=20) (Mean±SD)	p-value
4 weeks	0.95±0.22	1.40±0.50	0.001
8 weeks	1.80±0.41	2.45±0.51	0.001
12 weeks	2.75±0.44	3.25±0.44	0.002

(SD = standard deviation, 0~5 scale)

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PDGF (platelet-derived growth factor), TGF (transforming growth factors)- β 1, β 2, VEGF (vascular endothelial growth factors), PDEGF (platelet-derived endothelial cell growth factor), IL-1 (interleukin-1), bFGF (basic fibroblast growth factor), PAF-4 (platelet activating factor-4)
¹⁰⁾ 가
¹⁾ Agaloo
PRP 가
가
¹⁵⁾ Wiltfang
 β -TCP (β -tricalciumphosphate) PRP 가
PRP 가
8~10% 가
, Kim ⁸⁾
(demineralized freeze-dried allograft) PRP
가
PRP
가
가
가
Fennis ⁶⁾



Fig. 1. Radiographic appearance at immediate postoperatively, 4 weeks, 8 weeks, and 12 weeks, irrespectively (right column-control, left column-treated with PRP). Significantly greater new bone formation and graft incorporation of the allograft treated with PRP was shown compared with control graft.

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가 PRP 가 .

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Abstract**The Effect of Platelet-Rich Plasma (PRP) on the Healing of Allograft for the Treatment of Segmental Bone Defect of the Ulna in Rabbits**

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Purpose: The purpose of this study was to evaluate the effect of Platelet-Rich Plasma (PRP) on the healing of the allograft for the treatment of the segmental bone defect of the ulna in Rabbits.

Materials and Methods: About 2 cm-sized segmental bone defects were created on both ulna of twenty rabbits. The rabbits were divided into two groups, even and odd number group after numbering them from 1 to 20. The segmental bone from the odd numbered animal was transplanted to the even numbered animal, and the even numbered to the odd numbered. The left side of the ulna of the animal is grafted with a segmental allograft only. The right side of the ulna was grafted with a segmental allograft and 0.7 cc of PRP. Radiographs obtained at 0, 4, 8, and 12 weeks postoperatively were graded for radiologic union.

Results: The use of the combination of PRP and segmental allograft demonstrated improved healing on radiographic study compared with that demonstrated after use of allograft alone.

Conclusion: The results of the study suggests that the use of the combination of PRP and segmental allograft can be considered as an alternative method to manage the segmental defect of the long bone.

Key Words: PRP (Platelet-Rich Plasma), Allograft, Segmental bone defect, Bone union

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